

Remarks/Arguments:

Claims 1-35 are pending and rejected in the application. Claims 1 and 32 have been amended.

On page 3, the Official Action rejects claim 1, 6-8, 15-22, 24, 29, and 31 under 35 U.S.C. §103(a) as being unpatentable over Fullerton (U.S. Patent No. 5,677,927, Fullerton A) in view of Rouquette (U.S. Patent No. 7,308,035) and further in view of Wright (U.S. 2002/0101936). On page 13, the Official Action rejects claims 32-34 under 35 U.S.C. §103(a) as being unpatentable over Toshimitsu (U.S. Patent No. 6,735,256) in view of Rouquette, in view of Fullerton A, and in further view of Wright. It is respectfully submitted, however, that the claims are patentable over the art of record for at least the reasons set forth below.

Applicants' invention, as recited by claim 1, includes features which are neither disclosed nor suggested by the art or record, namely:

... a filter section for ... band-limiting each of the plurality of subcarrier-transmission signals in order to band limit bandwidths of the plurality of subcarrier transmission signals within a frequency range of the frequency band of the impulse modulation signal ...

... an antenna section for multiplexing and radiating at least two of the transmission signals including the same data.

Claim 1 relates to a filter which band limits the plurality of subcarrier signals. Specifically, the plurality of subcarrier signals are band limited in the frequency range of the impulse modulation signal. Claim 1 also relates to an antenna section which multiplexes two transmission signals including the same data. Support for these features can be at least found in Figs. 2 and 3, and furthermore on pages 14, 15 and 18 of the specification. No new matter has been added.

On page 5, the Official Action states that Wrights' paragraph 71 suggests a filter section for band limiting the transmission signal in a frequency range of an impulse modulation signal. Applicants, however, respectfully disagree. In Fig. 3, Wright shows three pulse shaping filters 316, 318 and 320. These pulse shaping filters band limit the impulse signals. This is supported by at least paragraph 71 of

Wright ("includes a sequence of modulation symbol impulses or rectangular pulses and occupies a relatively wide frequency spectrum prior to pulse shaping by a pulse-shaping circuit. The subsequent pulse-shaping circuit filters a modified symbol stream 504 and provides the overall spectral shaping to apply the specified bandwidth constraints"). Thus, Wright suggests band limiting the impulse signals. Wright, however, does not suggest band limiting the impulse signals into the frequency band of the original impulse modulation signal (Wright is not concerned with restricting the signals to within an overall bandwidth).

Rouquette suggests a diversity communication system. Specifically, in Col. 1 lines 35-50, Rouquette suggests transmitting the same data over different channels ("the same data is spread over different channels"). Rouquette, however, transmits the symbols having the same data over different antennas as shown in Figs. 1 and 2. Specifically, in Fig. 2, the signals having the same data are transmitted over antennas 1, 2, 3 and 4. Thus, Rouquette does not suggest multiplexing the signals.

Applicants' claim 1 is different than the art of record because of a filter section which band-limits the plurality of sub-carriers within the frequency band of the impulse modulation signal, and the antenna section which multiplexes at least two of the transmission signals having the same data ("... a filter section for ... band-limiting each of the plurality of subcarrier transmission signals in order to band-limit bandwidths of the plurality of subcarrier transmission signals within a frequency range of the frequency band of the impulse modulation signal ... an antenna section for multiplexing and radiating at least two of the transmission signals including the same data").

As shown in Applicants Fig. 2, filter section 250 comprises filters 201. These filters band limit the plurality of subcarrier signals. Specifically, the filters band-limit the sub-carrier transmission signals within a frequency range of the original impulse modulation signal. For example, as shown in Fig. 3, the original impulse modulation signal may have a bandwidth equivalent to the broadband signal (dashed line). The filter section then filters the plurality of sub-carrier signals as shown in F1-F7 so that they are within the broadband signal (dashed line). Thus, carrier signals F1-F7 are within the frequency range of the original impulse modulation signal (dashed line). This feature is at least supported on pages 14 and 18 of the specification ("250 is a

filter section for imputing a signal and divides it into a plurality of sub-carrier signals narrower in bandwidth than the input signal ... the signal outputted from the transmission section 205 is band-limited in its sub-carriers by the filter section 250").

Neither Fullerton A, Fullerton B, Rouquette, Wright, Aslanis (U.S. Publication 2002/0094049), Toshimitsu (U.S. Patent 6,735,256), nor any of their combinations suggest the filter section as recited in Applicants' claim 1. Thus, the combination (Fullerton A, Rouquette and Wright), the combination of (Fullerton A, Rouquette, Wright and Aslanis), the combination of (Fullerton A, Rouquette, Aslanis, Wright and Fullerton B), and the combination of (Toshimitsu, Rouquette, Fullerton A and Wright) are all deficient.

Accordingly, for the reasons set forth above, claim 1 is patentable over the art of record.

Claim 32 includes similar features to claim 1. Thus, claim 32 is also patentable over the art of record for at least the reasons set forth above.

Dependent claims 2-31 and 33-35 include all of the features of claims 1 and 32 from which they depend. Thus, these claims are also patentable over the art of record for at least the reasons set forth above.

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In view of the amendments and arguments set forth above, the above-identified application is in condition for allowance, which action is respectfully requested.

Respectfully submitted,



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